PPP Infrastructure Project Delivery: A life cycle evaluation model. ARC Linkage Project: LP120100347

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OVERVIEW

The quest for increased efficiency in public service delivery, the budget difficulties of many governments, and the growing receptivity of public opinion to the discourses for rehabilitating market regulations have lead to a growing number of forms of association between the public and private sectors. These types of association are referred to as a Public Private Partnership (PPP) and have become an integral part of Federal and State Government procurement strategy in Australia. While the PPP market in Australia is considered to be sophisticated and mature, several major failures have emerged with infrastructure projects such as the Sydney Harbour Tunnel, Sydney Airport Rail and Sydney's Cross City Tunnel. Moreover, many of the PPPs that have been procured have not been subject to any comprehensive form of ex-post evaluation in terms of what has been delivered. Emerging problems for projects in Queensland's CLEM 7 Tunnel and Victoria's Desalination Plant make rigorous life cycle evaluation by decision-makers more important and urgent.

The research team among others, have suggested that evaluation of political, economic, social and technological factors of PPP projects should not only be undertaken at the commencement of the project, but also throughout their whole life-cycle. Such an evaluation should be based upon mutually agreeable factors identified by the various stakeholders involved with the PPP. To address this issue, this research aims to develop a dynamic evaluation model that can be used to justify and evaluate the use of PPP delivery mechanisms for infrastructure projects throughout their life-cycle. Specific objectives of this evaluation include:

(1) identify the circumstances under which the use and type of PPP or other procurement method is most appropriate for particular major infrastructure projects;
(2) determine the political, economic, social and technological factors that can be used to justify the use of a particular procurement method or PPP;
(3) develop a series of key performance indicators to evaluate major infrastructure projects throughout their lifecycle; and
(4) design and develop a dynamic process model that can be used to evaluate various PPP and other procurement delivery mechanisms throughout their life cycle.

APPROACH

This research will focus on the effective deployment of PPPs juxtaposed with other innovative procurement methods for major infrastructure projects. The project specifically addresses how State Governments can inform and enrich their procurement policy and how best to obtain value for money through the effective use and integration of PPP with alliance and relationship contracting arrangements. Mindful of the considerable political, economic, social and technological risks associated with the use of PPPs, it is essential that the most appropriate form of procurement arrangement is implemented and managed effectively throughout the project's life-cycle.

Using dynamic simulation modelling the researchers will determine how benefit, cost and risk performance measurement/metrics for PPPs can inform and evaluate the use of PPPs together with alternative forms of procurement for specific project types.The developed model can be used as a project procurement management tool to guide and support the adoption of appropriate procurement methods and thus reduce the likelihood of their failure. In doing so, the research will contribute to 'promoting an innovative culture and economy', which has been established as a research priority area by the ARC.

TECHNIQUES

Two techniques will be used to analyze the data obtained from the case studies that are undertaken, namely the Analytical Hierarchy Process (AHP) and system dynamics. The AHP is a technique that accommodates subjective analysis by identifying and ranking process-related variables. AHP is often used as a research methodology where there is uncertainty and multiple criteria characteristics. The appropriateness of using AHP is justified since this method remains rigorous during the ranking of qualitative data. The AHP will be used as a method of identifying and prioritizing the respective benefits, costs and risks of innovative procurement methods developed within the political, economic, social and technological taxonomies, following their respective identification from data obtained from workshops and case studies. Having prioritised the benefits, costs and risks through AHP, these will then be modelled using system dynamics.

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